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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/551,053
Filing Date: May 16, 2007
Appellant(s): AVNI ET AL.

Caleb Pollack
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 4/26/11 appealing from the Office action mailed On 9/28/10.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 81, 85, 90-91 and 97-102.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

6,667,765	Tanaka	12-2003
6,219,091	Yamanaka et al	4-2001
6,254,531	Higuchi et al	7-2001
6,364,829	Fulghum	4-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 81, 85, 90-91 and 97-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (US Pat: 6,667,765) in view of Yamanaka et al (US Pat: 6,219,091) and further in view of Higuchi et al (US Pat: 6,254,531) and further in view of Fulghum (US Pat: 6,364,829).

Regarding claims 81, Tanaka in fig. 7 discloses an image pick-up apparatus comprising imaging device comprising: a light source (5), an imager (303, 2); and a controller (304), wherein the controller is configured to operate over a series of imaging

periods and during each imaging period to acquire an image from the imager [see column 8 lines 26-43, column 5 lines 44-59].

Tanaka teaches a light control circuit 304 and senses a quantity of flash light (white light, emphasis added) reflected from the object. The light control circuit 304 controls a time of flashing of the flash unit 5 responding to the quantity of light sensed by the photo-sensor 305; controlling exposure time (thus illumination duration, emphasis added) [see column 5 lines 1-5, column 8 lines 1-25]. Tanaka teaches signal processing circuit 307 that comprises an automatic gain control (AGC) circuit 307b that adjusts levels of the image signals by adjusting the gain [see column 6 lines 10-20].

Tanaka teaches a connector terminal 13 by which the camera is connected to a personal computer (PC) 18 (see FIG. 7). The image data taken by the image pickup unit 3 is processed by signal processing, displayed on monitor display 10, recorded and transmitted to the personal computer 18 [see column 3 lines 60-67].

Tanaka doesn't disclose operating the light source via one or more control pixels. With regards to control pixels; Applicant disclose control pixels may be adapted for fast read out which is well known in the art [see 0129, specification and discloses control pixels may be CMOS imager pixels [see 0151, specification].

However, Fulghum teaches pixellated CMOS image device [see column 2 lines 63-67].

Nevertheless, Yamanaka et al disclose all pixels reading type electronic endoscope comprises a control circuit controlling light operation based on a plurality of pixels [see column 4 lines 17-30].

In addition, Higuchi et al disclose an image pick device comprises a plurality of pixels which are accumulated in an image pick up device and controlling light operation [see column 1 lines 10-15].

Therefore, one with ordinary skill in the art at the time the invention was made would have been motivated to combine Tanaka with Fulghum by using CMOS imager pixels and with Yamanaka et al by using the all pixels reading means and Higuchi et al by using the image pick up; in order to reduce the cost of the system and for accuracy purposes.

Regarding claim 85, Tanaka teaches signal processing circuit 307 that comprises an automatic gain control (AGC) circuit 307b that adjusts levels of the image signals by adjusting the gain [see column 6 lines 10-20].

Regarding claims 90-91, Tanaka also teaches an exposure control time value (which is used as a threshold) and determine the amount of light based on exposure time (emphasis added and see column 5 lines 35-61]. Tanaka teaches comparing a difference time value with an exposure control step [see column 5 lines 35-61] and AGC circuit 307b amplifies the image signals by using the gain factor for compensating the insufficient exposure light quantity [see column 5 lines 35-61, column 8 lines 28-43]. As disclosed above the image data taken by the image pickup unit 3 is processed by predetermined signal processing, displayed on the monitor display 10, recorded on the

memory card 17, and transmitted to the personal computer 18, if necessary [see column 3 lines 60-67].

Regarding claims 97-100, with regards to environment parameter and environmental measuring tool; Applicant discloses environment parameter such as Ph level, temperature level and light level [see 0219].

As disclosed here, Tanaka teaches light quantity receives by photo sensor 305 reaches a predetermined quantity, a lightning stop signal is outputted to the light control circuit to stop the illumination [see column 8 lines 26-44]. The photo sensor is used as an environmental measuring tool to detect light level by comparing to a predetermined level and stopping the illumination is changing a mode of the device (emphasis added). Regarding claims 101-102, all other limitations are taught as set forth by the above teaching. The controller can control the gain factor repeatedly during a plurality of time periods (emphasis added and see column 8 lines 15-25]

(10) Response to Argument

With regards to claims 81, 90, 97 and 100, Applicant argues that "the control pixels being a subset of the plurality of pixels" are not taught in the advisory action.

The examiner disagrees because in the advisory action, the examiner argues that Fulghum discloses using ½ to 1/3 of pixels [see column 10 lines 1-15] which constitutes a subset of all the pixels.

With regards to Fulghum, Applicant argues that pixels are selected because of their level. Neither of these definitions is relevant nor can be used with "record via one or more control pixels, the control pixels being a subset of the plurality of pixels, the amount of the white light that is reflected to the imaging device".

With regards to "control pixels being a subset of plurality of pixels"; Applicant describes a reliable exposure measurement may require approximately 1.5% (for example, 11 pixels out of 640) of the selected pixels to be saturated in order to pass a saturation threshold, according to which gain decisions may be taken. Other frame sizes, percentages, and sample rates may be used, as appropriate. For example, 9, 11, 15, 24, and any other number of pixels can be used per frame or per sampled subset to determine a saturation threshold [see 0195, specification].

Applicant further teaches each frame of image data includes 256 rows of 256 pixels each, each pixel including data for color and brightness, according to known methods. For example, in each pixel, color may be represented by a mosaic of four sub-pixels, each sub-pixel corresponding to primaries such as red, green, or blue (where one primary is represented twice). The brightness of the overall pixel may be recorded by, for example, a one byte (i.e., 0-255) brightness value [see 0194, specification].

Accordingly, the examiner submits that Fulghum discloses selecting pixels that are reset and applied a threshold value [see column 10 lines 21-23]. Fulghum also discloses pixel of colors such as red, green and blue [see column 10 lines 1-14] and further mentions few pixels are saturated [see column 9 lines 44-45]. Therefore,

according to Applicant description "11 of the selected pixels to be saturated in order to pass a saturation threshold" [see 0195, specification]. One skilled in the art provided with Fulghum's teaching which has the capability of selecting pixels (which is a subset) that are saturated and apply a threshold, would have been motivated to control exposure time based on a subset of pixels that are saturated.

Applicant argues that the final office action the examiner stated that Fulghum teaches a pixellated CMOS device but did not assert that Fulghum teaches control pixels; and argues that "1/2 to 1/3" is a level pixel in a derived image, not a number or amount of pixels, and thus can equate to "the control pixels being a subset of the plurality of pixels".

Applicant's arguments in this regard are not persuasive because Fulghum discloses selecting pixels that are reset and applied a threshold value [see column 10 lines 21-23]. Fulghum also disclose pixel of colors such as red, green and blue [see column 10 lines 1-14] and further mention few pixels are saturated [see column 9 lines 44-45]. Therefore, according to Applicant description "11 of the selected pixels to be saturated in order to pass a saturation threshold" [see 0195, specification]. One skilled in the art provided with Fulghum's teaching which has the capability of selecting pixels (which is a subset) that are saturated and apply a threshold, would have been motivated to control exposure time based on a subset of pixels that are saturated.

Applicant argues that Fulghum doesn't teach using the pixels of an imager (a physical device) as input for any reason (including illumination level control).

The examiner disagrees because Fulghum determines saturation of selected pixels by comparing to a threshold just as Applicant. Therefore, one skilled in the art would control an imager (for illumination level) as taught by Tanaka based on saturation of a subset of pixels.

Applicant argues that the selected pixels of Fulghum are output pixels to be reset, displayed in an image to a user not input pixels in an imager and further argues that Fulghum doesn't teach using a certain number of pixels to record a level of white light and control pixel being a subset of a plurality of pixels.

The examiner submits that Applicant control illumination level of an imager of a physical device based on whether a subset of pixels reach saturation [see 0195, specification] as explained above. Accordingly, Fulghum also determines saturation of selected pixels by comparing to a threshold just as Applicant. Therefore, one skilled in the art would control an imager (for illumination level) as taught by Tanaka based on saturation of a subset of pixels.

Furthermore, Tanaka controls exposure time by controlling illumination level of white light [see column 6 lines 10-20]. Tanaka discloses an imager, a light source and a controller that is configured control exposure time [see column 8 lines 26-43, column 5 lines 44-59] as explained in the last office action.

Therefore, one skilled in the art at the time the invention was made would have been motivated to combine Tanaka with Fulghum by controlling an exposure time and illumination level of an imager using the capability of Fulghum to select a subset of pixels to reach saturation and based on the saturation of certain pixels to control the imager for efficiency purposes.

With regards to Yamanaka and Higuchi, Applicant argues that they don't teach "control pixels being a subset of the plurality of pixels".

Applicant arguments are not persuasive since the control pixels being a subset of the plurality of pixels is disclosed by Fulghum as explained above.

Applicant also argues that in paragraph [0129] the use of control pixel is new and is not known in the art.

The examiner submits that Applicant discloses Individual control of illumination sources may be enabled by using special control pixels. These control pixels may be adapted for fast read-out, which is well known in the art [see 0129]. Furthermore, Applicant discloses in paragraphs 0152, 0159 "scanning of the control pixels 160C may be performed similar to the scanning of the regular pixels 160P... the ability to randomly scan any desired pixel in a CMOS pixel array, by suitably addressing the pixel readout lines (not shown) as is known in the art".

Applicant argues about sampling instance. However, examiner submits that the Applicant did disclose "the control pixels 160C may be fabricated as analog photodiodes with appropriate readout or sampling circuitry (not shown) as is known in the art" [see 0175, specification].

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/JOEL F BRUTUS/

Examiner, Art Unit 3777

Conferees:

/Kenneth B Rinehart/

Supervisory Patent Examiner, Art Unit 3743

/Tse Chen/

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